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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/421,625	10/19/1999	EUGENE P. MARSH	M122-1284	4404
21567	7590	09/09/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			VU, HUNG K	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/421,625	<b>Applicant(s)</b> MARSH, EUGENE P.	
	<b>Examiner</b> Hung K. Vu	<b>Art Unit</b> 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 97-120 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 97-109 and 117-120 is/are allowed.
- 6) ☒ Claim(s) 110-116 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>07/09/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Request for Continued Examination***

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/06/04 has been entered. An action on the RCE follows.

2. The indicated allowability of claims 110 – 116 is withdrawn in view of the newly discovered reference(s) submitted by Applicant to Nishioka (JP8-17939) and Yamauchi et al. (JP9-51079). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 110, 111, 113, 114 and 116 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishioka (JP8-17939, of record).

Nishioka, discloses, as shown in Figure 1, a capacitor comprising,

a substrate (1);

Art Unit: 2811

a hemispherical grain platinum layer (4) over the substrate, the hemispherical grain platinum layer having a continuous surface characterized by columnar pedestals with an average diameter of at least about 200 Å (within the range of 500 Å);

an intervening layer (2,3) between the hemispherical grain platinum layer and the substrate.

With regard to claim 111, Nishioka discloses the intervening layer (lower portion of layer 4) comprises platinum.

With regard to claim 113, Nishioka discloses the substrate comprises monocrystalline silicon (see Section [0003]).

With regard to claim 114, Nishioka discloses the hemispherical grain platinum layer is further characterized by columnar pedestals that are at least about 300 Å tall (see Section [0003]).

With regard to claim 116, Nishioka discloses, as shown in Figure 1, a capacitor comprising,

a first capacitor electrode (4) over a monocrystalline silicon substrate (1);

a second capacitor electrode (8);

a dielectric layer (5) between the first and second capacitor electrodes;

at least one of the first and second capacitor electrodes comprise hemispherical grain platinum having a continuous surface characterized by columnar pedestals having heights greater than or equal to about one-third of a total thickness of the platinum and having an average

Art Unit: 2811

diameter of at least about 200 Å (within the range of 500 Å). Note that Figure 1 shows columnar pedestals having heights greater than or equal to about one-third of a total thickness of the roughened platinum.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 111 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (JP8-17939, of record) in view of Yamauchi et al. (JP9-51079, of record).

Nishioka discloses the claimed invention including the integrated circuit as recited in the rejection above. Nishioka further discloses the intervening layer comprising titanium. Nishioka does not disclose the intervening layer comprising platinum. However, Yamauchi et al. discloses the intervening layer (20) comprising platinum. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the intervening layer of Nishioka platinum in order to prevent the silicon element of the substrate to spread to the front face of the lower electrode.

5. Claims 112 and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (JP8-17939, of record) in view of Nishioka (JP8-17939, of record).

Art Unit: 2811

With regard to claim 112, Nishioka discloses the claimed invention including the integrated circuit as recited in the rejection above. Nishioka further discloses the intervening layer comprising titanium. Nishioka does not disclose the intervening layer comprising at least one of  $\text{IrO}_2$ ,  $\text{RuO}_2$ ,  $\text{RhO}_2$ , or  $\text{OsO}_2$ . However, at Section [0018], Nishioka discloses  $\text{IrO}_2$ ,  $\text{RuO}_3$ , or an oxide of Ir can be used for an adhesive layer which is the intervening layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the intervening layer of Nishioka comprising at least one of  $\text{IrO}_2$ ,  $\text{RuO}_2$ ,  $\text{RhO}_2$ , or  $\text{OsO}_2$ , in order to simplify the process steps and materials.

With regard to claim 115, Nishioka disclose the claimed invention including the integrated circuit as recited in the rejection above. Nishioka further discloses the columnar pedestals have a diameter of about 500 Å. Nishioka does not disclose the columnar pedestals have an average diameter of about 200 Å. Although Nishioka does not teach exact the average diameter of the columnar pedestals, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the hemispherical grain platinum layer platinum layer and the columnar pedestals of Nishioka having a desired average diameter, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

***Allowable Subject Matter***

6. Claims 97 – 109 and 117 – 120 are allowed.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Mon-Thurs 6:00-3:30, alternate Friday 7:00-3:30, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272-1732. The Central Fax Number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Vu

September 7, 2004

A handwritten signature in cursive script, appearing to read "Hung Vu", is written over a horizontal line.

Hung Vu

Patent Examiner